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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,549	05/08/2002	Y. Tom Tang	PF-0676 USN	4687

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EXAMINER	
KAM, CHIH MIN	

ART UNIT	PAPER NUMBER
1653	

DATE MAILED: 01/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/890,549	TANG ET AL.	
	Examiner	Art Unit	
	Chih-Min Kam	1653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8-10,12-16 and 23-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-10,12-16 and 23-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *12/8/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. In the response to restriction requirement filed December 8, 2003, claims 1, 2, 4 and 10 have been amended, claims 7, 11 and 17-22 have been cancelled, and new claims 24-27 have been added, thus, claims 1-6, 8-10, 12-16 and 23-27 are pending. Applicant's election with traverse of Group 11, claims 3-6, 8 and 10, drawn to a polynucleotide encoding a polypeptide related to SEQ ID NO:4 or a polynucleotide related to SEQ ID NO:16, a cell transformed with the polynucleotide, and a method for producing a polypeptide related to SEQ ID NO:4 is acknowledged. The traversal is on the ground(s) that the unity of invention standard should be applied in the instant application which is in a national stage, the specific provisions of the administrative regulation under the PCT and MPEP strongly support a finding of unity of invention among all the claims in the present case, and minimal burden to search additional claims such as claims 12-14 and 23-27 under U.S. practice (pages 8-12 of the response). Applicants also request rejoinder of the method claims upon allowance of product claims under U. S. practice (page 13 of the response). The response has been considered, the argument is found persuasive regarding unity of invention exists between claims to polypeptides and claims to polynucleotides which encode the polypeptide, however, regarding antibody, which specifically binds to the polypeptide (claim 9), and a microarray, which refers to an arrangement of distinct polynucleotides on a substrate (claims 24 and 25), the argument is not persuasive because the antibody and the microarray are distinct chemical entities from the polypeptide and the polynucleotide encoding the polypeptide. Regarding the burden of search, coexamination of each of the additional groups would require additional search of different art area. The

restriction groups have acquired a separate status in the art as a separate subject for inventive effect and require independent searches. The search for each of the invention is not coextensive particularly with regard to the literature search. A reference which would anticipate the invention of one group would not necessarily anticipate or make obvious any of the other group. The literature search, particularly relevant in this art, is not co-extensive and is much more important in evaluating the burden of search. Burden in examining materially different groups having materially different issues also exist. Upon reconsideration, claims 1-6, 8, 10, 12-15 and 26, which are directed to a polypeptide, a polynucleotide encoding the polypeptide, a cell transformed with the polynucleotide, a method for producing the polypeptide, and a first method of using the polynulceotide, are examined. See 37 C.F.R. 1.475 on Unity of Invention.

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims that depend from or otherwise include all the limitations of the allowable product claim will be rejoined in accordance with the provisions of MPEP § 821.04. **Process claims that depend from or otherwise include all the limitations of the patentable product** will be entered as a matter of right if the amendment is presented prior to final rejection or allowance, whichever is earlier. Amendments submitted after final rejection are governed by 37 CFR 1.116; amendments submitted after allowance are governed by 37 CFR 1.312.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined

claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103, and 112. Until an elected product claim is found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowed product claim will not be rejoined. See "Guidance on Treatment of Product and Process Claims in light of *In re Ochiai, In re Brouwer* and 35 U.S.C. § 103(b)," 1184 O.G. 86 (March 26, 1996). Additionally, in order to retain the right to rejoinder in accordance with the above policy, Applicant is advised that the process claims should be amended during prosecution either to maintain dependency on the product claims or to otherwise include the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.**

Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Informalities

The disclosure is objected to because of the following informalities:

2. The specification cites a web address (at page 12, lines 5 and 10) in the form of a hyperkink and/or other forms of browser-executable code, which is impermissible and require deletion. Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-6, 8, 10, 12-15 and 26 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well-established utility. The claims are directed to a polypeptide comprising an amino acid sequence of SEQ ID NO:4, an amino acid sequence having at least 90% sequence identity to SEQ ID NO:4 or a biologically active fragment of a polypeptide comprising SEQ ID NO:4 (claims 1, 2); a pharmaceutical composition comprising the polypeptide (claim 15); a polynucleotide encoding the polypeptide (claims 3-5), a polynucleotide comprising SEQ ID NO:16, a nucleotide sequence having at least 90% sequence identity to SEQ ID NO:16, a polynucleotide complementary to the nucleotide sequence or an RNA thereof (claim 10); a cell comprising the polynucleotide (claim 6); a method of producing the polypeptide (claim 8); and a method of detecting a target polynucleotide in a sample by hybridizing with a probe or by amplifying the target polynucleotide or fragment thereof (claims 12-14 and 26). The polypeptide of SEQ ID NO:4 is disclosed as a human lipid-associated protein (LIPAP-4). The specification indicates that lipids and lipid-associated proteins have roles in human diseases, increased synthesis of long-chain fatty acids occurs in neoplasms including those of the breast, prostate, ovary, colon and endometrium, and there is a strong inverse correlation between the levels of plasma HDL and risk of premature coronary heart disease; and the new human lipid associated proteins and the polynucleotides encoding the proteins are useful in the diagnosis, prevention and treatment of various disorders associated with LIPAP (page 2, line 9-page 3, line 1). The specification also indicates the polypeptide of SEQ ID NO:4 contains 759 amino acid residues, has a signature sequence of LIM domain (R344-Q444), and shows a homologous sequence, sterol regulatory element binding protein-2, identified by BLAST analysis (Table 2, page 19, lines 23-30). The

conclusion that SEQ ID NO:4 being a lipid-associated protein is based on the polypeptide having LIM domain and a homologous sequence of sterol regulatory element binding protein-2, identified by BLAST analysis, however, the specification does not disclose the sequence identity between SEQ ID NO:4 and the sterol regulatory element binding protein-2. Therefore, it would be necessary to have information like function or activity of the protein to confirm the identity of polypeptide of SEQ ID NO:4 as a lipid-associated protein. However, the specification does not disclose a specific function or activity for the polypeptide of SEQ ID NO:4. The specification (Table 3) shows the tissue-specificity and diseases associated with the expression of nucleotide sequence encoding the polypeptide of SEQ ID NO:4, e.g., the expression of LIPAP-4 in disease tissues such as reproductive, gastrointestinal, and nerve tissues, thus the LIPAP appears to play a role in cardiovascular, neurological, and gastrointestinal disorders, and disorders of lipid metabolism (pages 29-31), however, the direct correlation between the disease and the polypeptide is not revealed, and the outcome for the treatment of a disease using a composition comprising the polypeptide, and the effect of decreasing or increasing the expression or activity of LIPAP-4 in the treating disorders are not demonstrated. For these reasons, the instant invention does not possess a specific or a well-established utility, although there is a general utility that is applicable to the broad class of lipid-associated proteins. The utility is not a substantial utility because it requires further research to identify or reasonably confirm a "real world" context of use. Basic research to characterize the claimed invention, use in an assay to identify modulators of the instant invention, production of antibodies to identify other related proteins or use of polynucleotides to identify other related sequences do not constitute substantial utilities. Furthermore, sequence search indicates SEQ ID NO:4 has the same amino acid

sequence as EPLIN-β (an isoform of Epithelial Protein Lost in Neoplasm, a cytoskeleton-associated protein; Chen et al., Gene, 248, 69-76 (2000); Maul et al., Oncogene 18, 7838-7841 (1999)), and it has been proposed that EPLIN promotes the formation of stable actin filament structures such as stress fibers at the expense of more dynamic actin filament structures such as membrane ruffles, and reduced expression of EPLIN may contributes to the mobility of invasive tumor cells (Maul et al., J. Cell Biol. 160, 399-407 (2003)), thus, it appears the biological function of EPLIN-β is different from that of SEQ ID NO:4 as a lipid-associated protein.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-6, 8, 10, 12-15 and 26 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

5. Claims 1, 3, 5, 6, 8, 10, 12-15 and 26 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 3, 5, 6, 8, 10, 12-15 and 26 are directed to a polypeptide comprising an amino acid sequence of SEQ ID NO:4, an amino acid sequence having at least 90% sequence identity to

SEQ ID NO:4 or a biologically active fragment of a polypeptide comprising SEQ ID NO:4 (claim 1); a pharmaceutical composition comprising the polypeptide (claim 15); a polynucleotide encoding the polypeptide (claims 3, 5), a polynucleotide comprising SEQ ID NO:16, a nucleotide sequence having at least 90% sequence identity to SEQ ID NO:16, a polynucleotide complementary to the nucleotide sequence or an RNA thereof (claim 10); a cell comprising the polynucleotide (claim 6); a method of producing the polypeptide (claim 8); and a method of detecting a target polynucleotide in a sample by hybridizing with a probe or by amplifying the target polynucleotide or fragment thereof (claims 12-14 and 26). The specification indicates that the polynucleotide has at least 90% sequence identity to SEQ ID NO:16 (page 4, lines 17-29); and the polypeptide has at least 90% sequence identity to SEQ ID NO:4 or a biologically active fragment of SEQ ID NO:4 (page 3, line 28-page 4, line 3). However, the specification does not specify which portion of the polypeptide is identical to SEQ ID NO:4, which fragment of SEQ ID NO:4 is biologically active, which portion of the polynucleotide is identical to SEQ ID NO:16, or which fragment of SEQ ID NO:16 encodes a biologically active fragment. There is no disclosure indicating all the sequences having at least 90% sequence identity to SEQ ID NO:4 are functional, and the specification has not identified any biologically active fragment of SEQ ID NO:4. Without guidance for structure to function/activity, one skilled in the art would not know which region or residue(s) of SEQ ID NO:4 is essential for function/activity and how to identify a functional polypeptide. The lack of a structure to function/activity relationship and the lack of representative species for the polypeptide having at least 90% sequence identity to SEQ ID NO:4, the biologically active fragment of SEQ ID NO:4, the polynucleotide having at least 90% sequence identity to SEQ ID NO:16, or the fragment of SEQ ID NO:16 as encompassed by

the claims, applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise terms that a skilled artisan would not recognize applicants were in possession of the claimed invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 15 is indefinite as to "an effective amount ", it is not clear what the effective amount of the polypeptide would do.

Conclusion

8. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Min Kam whose telephone number is (571) 272-0948. The examiner can normally be reached on 8.00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Low can be reached on (571) 272-0951. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 308-4227 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Chih-Min Kam, Ph. D. CMK
Patent Examiner

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January 22, 2004

ROBERT A. WAX
PRIMARY EXAMINER